

**REMARKS****Amendments to the Specification:**

Applicant noticed several grammatical errors in the specification and requests amendments to the specification, and adds that the amendments do not raise new matter.

**Drawing objections:**

Examiner has objected to the drawings because of incoherency between the figures, and in particular the Examiner points out, for example, how is figure 1 related to figure 2? Applicant states that Figure 1 is a view of a Bragg grating such as used in Figure 2. Applicant feels that it has been explained in the “Detailed Description Of The Invention” section, on page 9 lines 21-24 that Figure 1 is a view of external elements using Bragg gratings with a resonating optical reflector.

Examiner also objects that there seems to be more than one number for the same element. For example, the Examiner points out that reference numbers 100, 420, and 500 all represent “substrate”. The Applicant has followed a numbering system where all elements of Figure 1 have reference numbers ranging from 100 to a potential maximum of 199. Figure 2 similarly have all elements having reference numbers ranging from 200 to a potential maximum of 299. Figures 3-5 follow a similar numbering system. Although items 100, 420, and 500 are labeled as “substrates”, they appear in different embodiments and are thus designated by different element numbers.

**Claim rejections:**

**35 USC §112:** Claims 1-22 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. In particular, the Examiner points out that independent claims 1 and 12 recite “external feedback elements”, however, the specification does not clarify which element(s) provide feedback or how those elements are situated to provide feedback.

Applicant respectfully disagrees and points out that these “external feedback elements” have been disclosed in the specification. One instance is on page 6, lines 6-7, which states “The semiconductor laser is produced using a ring resonator which when combined with a Bragg grating acts as the external feedback element.” Another instance is on page 17, lines 7-8, which states “..and straight output waveguide section marked 2 that is the external feedback element with the Bragg gratings.” Thus, Applicant contends that the rejection is moot.

Claims 1-22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Examiner states:

(1) “Independent claims 1 and 12 recite a “ring resonator” and “feedback elements”. However, the individual components comprising the “ring resonator” and the “feedback elements” are not stated. Furthermore, no structural connections between the ring resonator and feedback elements are provided.”

Applicant respectfully disagrees and states that the connection between “ring resonator” and the “feedback elements” have been mentioned in the specification. For example, page 19, line 25-page 20, line 3 states: “Ring resonator 700 is placed in close proximity to straight input waveguide section marked 1 that originates from a gain chip, and straight output waveguide section marked 2 that is the external feedback element with the Bragg gratings.” There are other instances in the specification where the feedback elements use the Bragg gratings, which are part of the straight waveguide and have been disclosed several times in the specification.

(2) “Claims 3 and 14 recite the term “narrow reflection band”. This term is vague, and as a result, Examiner is unsure what is being claimed.” Applicant has canceled claims 3 and 14.

(3) “Claims 4 and 15 recite the term “sharp reflectance resonance”. This term is vague, and Examiner is unsure what is being claimed.” Applicant has canceled claims 4 and 15.

(4) “Claims 9 and 20 recite the term “evanescent wave interaction”. This is not a generic term in the art, and therefore, must be defined in the respective claims.”

Applicant respectfully disagrees with the Examiner and states that page 18, lines 24 through page 19, lines 4 states: “The coupling between the ring and straight waveguide sections is accomplished through evanescent wave interaction. This interaction and the coupled mode theory accompanying it are described in further detail in the book entitled “Physics of Optoelectronic Devices” by S. L. Chuang, John Wiley and Sons (New York, 1995), and incorporated herein as reference. This coupling can be further described by effective mirror reflectivities in the paper by D. Rafizadeh (see reference above).” Since this term has been described in the art, Applicant submits that the claim language is supported.

(5) “Claims 10 and 21 recite the term “said Bragg grating is matched with one of the resonator peaks.” The use of the word “matched” renders the claim vague and indefinite since the context in which it is used does not provide the necessary structure to conform the invention.” Applicant respectfully disagrees and contends that the claim element is described on pages 17 -18 of the specification.

**35 USC §102:** Claims 1, 4, 5, 8, 9, 12, 15, 16, 19, and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Bernard et. al. ‘342.

Applicant respectfully disagrees and states that the Bernard patent indeed teaches a hybrid laser that utilizes a ring resonator as a feedback element, however the Bernard invention uses a mirror element (item 16, in Figs. 5 and 6), whereas the present invention in amended claims 1 and 12 uses a Bragg grating. Utilizing a ring resonator with a mirror as in the Bernard patent leads to lasing at multiple wavelengths (multimode operation), whereas using a Bragg grating as in the present invention causes a single wavelength operation.

In view of at least the above difference, Bernard does not teach, describe, or suggest the claimed invention, and hence does not claim all the limitations of the present invention.

**35 USC §103:** Claims 2, 3, 13, and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bernard et. al. ‘342 in view of Minden et. al. ‘038.

Since the above claims are dependent on an allowable independent claim, the claims are themselves allowable.

**35 USC §103:** Claims 6, 7, 17, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bernard et. al. '342 in view of Holzner et. al. '855 and Iwasaki '973. Claims 10, 11, 21, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bernard et. al. '342 in view of Minden et. al. '038 as applied to claims 2, 3, 13, and 14 above, and further in view of the admitted prior art.

Since the above claims are dependent on an allowable independent claim, the claims are themselves allowable. -

**35 USC §103:** Claims 10, 11, 21, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bernard et al '342 in view of Minden et al '038 as applied to claims 2, 3, 13, and 14 above, and further in view of the admitted Prior Art.

Since the above claims are dependent on an allowable independent claim, the claims are themselves allowable.

**CONCLUSION**

The examiner has rejected claims 1-22. Applicant has amended claims 1 and 12, and has cancelled claims 2, 3, 4, 13, 14, and 15. For at least the foregoing reasons, Applicant submits that pending claims 1, 5-12, and 16-22 are now in condition for allowance. Applicant therefore respectfully requests that pending claims 1, 5-12, and 16-22 be allowed.

Respectfully submitted,

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